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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,788	10/26/2001	David M. Curran	TI-29038	5683

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EXAMINER

ELEY, TIMOTHY V

ART UNIT PAPER NUMBER

3724

DATE MAILED: 12/31/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,788

Applicant(s)

CURRAN ET AL. *CA*

Examiner

Timothy V Eley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 15-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1, and 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (APA; page 2 of applicant's specification) in view of Jones'784 et al and Ball et al.

a. The APA teaches a method of reducing thickness of spin-on glass on semiconductor wafers comprising: forming a spin-on glass layer on a semiconductor wafer wherein the spin-on glass layer comprises a protuberance at an outer edge of the semiconductor wafer; and dissolving the added thickness of the spin-on glass by using a solvent to dissolve the outer two to three millimeters of the wafers so that the wafers can be handled by handling machinery.

b. The APA does not disclose reducing the thickness of the spin-on glass on semiconductor wafers by: rotatably mounting a semiconductor wafer with a vacuum chuck in a substantially horizontal position (claim 3); positioning a grinding member proximate an outer edge of the semiconductor wafer; rotating the semiconductor wafer; rotating the grinding member; applying a chemical to the spin-on glass protuberance at the outer edge of the semiconductor wafer; and engaging the rotating grinding member with the spin-on glass protuberance at the outer edge of the rotating semiconductor wafer (applicant's claim 1).

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c. Jones' 784 et al teach removing a protuberance from the outer edge of a semiconductor wafer by: rotatably mounting the semiconductor wafer with a vacuum chuck in a substantially horizontal position(column 1, lines 54 and 55); positioning a grinding member(24) proximate the outer edge of the semiconductor wafer; rotating the semiconductor wafer; rotating the grinding member; and engaging the rotating grinding member with the protuberance at the outer edge of the rotating semiconductor wafer in order to remove the protuberance from the other edge of the wafer thereby eliminating electrical problems(see column 1, lines 63-end to column 2, lines 1-13; figures 4A,4B, and 5; column 1, lines 33-43; column 6, lines 11-25).

d. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have reduced thickness of the spin-on glass on the semiconductor wafers of the APA as taught by Jones et al by: rotatably mounting a semiconductor wafer with a vacuum chuck; positioning a grinding member proximate an outer edge of the semiconductor wafer; rotating the semiconductor wafer; rotating the grinding member; and engaging the rotating grinding member with the spin-on glass protuberance at the outer edge of the rotating semiconductor wafer in order to remove the protuberance from the other edge of the wafer thereby eliminating electrical problems.

e. Regarding claim 1, the APA as modified does not disclose applying a chemical to the spin-on glass protuberance at the

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outer edge of the semiconductor wafer before engaging the rotating grinding member with the semiconductor wafer.

f. Ball et al disclose that it is well known to apply a chemical, which is hydrofluoric acid to the outer edge of a semiconductor wafer to aid in removing material from the wafer.

g. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the method of the APA as modified by Jones et al by applying hydrofluoric acid to the spin-on glass protuberance at the outer edge of the semiconductor wafer as taught by Ball et al in order to aid in removing the protuberance from the outer edge of the wafer.

h. Regarding claims 4, and 5, the grinding member is oriented in both vertical and horizontal positions, as broadly recited by applicant.

i. Regarding claim 6, exactly how the acid is applied would have been an obvious matter of choice since applicant has not stated that using a syringe provides any stated advantage over the prior art, and it appears that applicant's invention would function equally as well by applying the acid in the manner taught by the APA as modified Ball et al. Furthermore, any appropriate means for efficiently supplying the acid to the outer edge portion would work in applicant's invention.

j. Regarding claims 7, and 8, the APA as modified does not disclose pneumatically controlling or spring-loading the grinding

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member. However, exactly how the grinding member is caused to engage with the protuberance at the outer edge of the semiconductor wafer would have been an obvious matter of choice and structural design to one having ordinary skill in the art at the time of the invention, since applicant has not disclose that the specific manner in which grinding member is caused to engage with the outer edge of the semiconductor wafer provides any stated advantage over the prior art, and it appears that applicant's invention would work equally as well if the grinding member is caused to engage with the outer edge of the semiconductor wafer as taught by the APA as modified by Jones et al. Furthermore, any means for appropriately applying the grinding member to the protuberance in order to efficiently remove it would seem to work in applicant's invention.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the APA in view of Jones' 784 et al and Ball et al as applied to claim 1 above, and further in view of Ang et al.

- a. The APA as modified is explained above.
- b. The APA as modified does not disclose disengaging the grinding member and rinsing the semiconductor wafer with deionized water.
- c. Ang et al discloses that it is well known to disengage a machining member from a semiconductor wafer which has been processed with a chemical, and rinsing the semiconductor wafer with deionized water in order to remove the chemical (see column 5, lines 45-54).

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d. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to have further modified the method of the APA by disengaging the grinding member and rinsing the semiconductor wafer with deionized water as taught by Ang et al in order to remove the chemical therefrom.

4. Claims 15, and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the APA in view of Jones' 784 et al and Ball et al as applied to claims 1 and 3-8 above, and further in view of Hakomori et al.

a. The APA as modified is explained above.

b. The APA as modified does not disclose providing a chemical in a container; and rotating the semiconductor wafer while the semiconductor wafer is in contact with the grinding member and while the portion of the spin-on glass protuberance at the outer edge of the semiconductor wafer is immersed in the chemical.

c. Hakomori et al disclose providing a chemical in a container; rotatably mounting a semiconductor wafer; bearing a grinding member against a portion of an outer edge of the semiconductor wafer; and rotating the semiconductor wafer while the semiconductor wafer is in contact with the grinding member and while the portion of the outer edge of the semiconductor wafer is immersed in the chemical in order to more efficiently supply the chemical(see column 4, lines 26-34, and figure 3), and in order to remove imperfections at a wafer outer edge(see column 2, lines

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7-24; column 2, lines 59-67; column 5, lines 1-14; and figures 1 and 2).

d. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the method of the APA as taught by Hakomori et al by: providing a chemical in a container; and rotating the semiconductor wafer while the semiconductor wafer is in contact with the grinding member and while the portion of the spin-on glass protuberance at the outer edge of the semiconductor wafer is immersed in the chemical in order to more efficiently supply the chemical.

e. Regarding claims 17 and 18, the grinding member is oriented in both vertical and horizontal positions, as broadly recited by applicant.

f. Regarding claims 19 and 20, the APA as modified does not disclose pneumatically controlling or spring-loading the grinding member. However, exactly how the grinding member is caused to engage with the protuberance at the outer edge of the semiconductor wafer would have been an obvious matter of choice and structural design to one having ordinary skill in the art at the time of the invention, since applicant has not disclose that the specific manner in which grinding member is caused to engage with the outer edge of the semiconductor wafer provides any stated advantage over the prior art, and it appears that applicant's invention would work equally as well if the grinding

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member is caused to engage with the outer edge of the semiconductor wafer as taught by the APA as modified by Jones et al. Furthermore, any means for appropriately applying the grinding member to the protuberance in order to efficiently remove it would seem to work in applicant's invention.

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the APA in view of Jones'784 et al, Ball et al, and Hakomori et al as applied to claim 15 above, and further in view of Ang et al.

e. The APA as modified is explained above.

f. The APA as modified does not disclose disengaging the grinding member and rinsing the semiconductor wafer with deionized water.

g. Ang et al discloses that it is well known to disengage a machining member from a semiconductor wafer which has been processed with a chemical, and rinsing the semiconductor wafer with deionized water in order to remove the chemical(see column 5, lines 45-54).

h. Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to have further modified the method of the APA by disengaging the grinding member and rinsing the semiconductor wafer with deionized water as taught by Ang et al in order to remove the chemical therefrom.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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a. The cited prior art disclose the removal of a protuberance at the outer edge of a semiconductor wafer.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

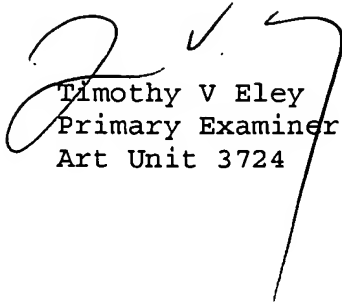
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy V Eley whose telephone number is 703-308-1824. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Allan N Shoap can be reached on 703-308-1082. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.


Timothy V Eley
Primary Examiner
Art Unit 3724

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